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THE ROLE OF THE MOTOR ANALYZER IN THE DEVELOPMENT OF SPEECH ACTIVITY IN PRESCHOOL CHILDREN

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ABSTRACT: - This article discusses the role of the motor analyzer in the development of speech activity in preschool children.

KEYWORDS: Speech, kinesthetic analyzer, speech movements, sound pronunciation, voluntary movements, articulatory motility, proportionality.

INTRODUCTION

As you know, each child has a different development of the constitutional organism. In healthy preschool children, speech develops very quickly. That is, each child learns new information and new words.

Speech is an activity that is carried out with the coordinated functioning of the brain and other parts of the nervous system. Auditory, visual, motor and kinesthetic analyzers take part in the implementation of the speech function.

The main results and findings

For the correct pronunciation of a sound, a child needs to reproduce an articulatory pattern, consisting of a complex set of movements, while articulation, phonation and breathing must be sufficiently coordinated in their work, and speech movements should be correlated with the corresponding auditory

sensations. In order for the child to understand the meaning of the word, it is necessary to merge auditory, visual and tactile sensations into a single image of the object. THEM. Sechenov noted: "... every sensation is by nature mixed ... a muscular sensation is necessarily mixed with it, which is stronger than others."

Physiologists attached great importance to the muscular sensations that arise during articulation. So, I.P. Pavlov noted: "Speech is, first of all, muscle sensations that go from the speech organs to the cerebral cortex." The development of sound pronunciation is associated with the improvement of the work of the peripheral speech apparatus. In a healthy child, mastery of the sound system of the language occurs simultaneously with the development of general motor skills and differentiated hand movements. MM. Koltsova experimentally proved that when training subtle movements of the fingers, speech not only develops more intensively, but also turns out to be more perfect. The relationship between the development of speech and the formation of general, fine and articulatory motor skills is emphasized by many researchers. Thus, the development of the motor apparatus is a factor stimulating the development of speech, and it plays a leading role in the formation of neuropsychic processes in children. [3]

N. A. Bernstein developed the theory of movement organization and referred speech to the highest level of movement organization. Bernstein defined the stages of performing voluntary movement, which must be taken into account in corrective work with various forms of speech pathology, characterized by a violation of voluntary motor acts. At the initial stage, the perception and assessment of the situation is carried out by the individual himself, included in this situation. At the second stage, a motor task and an image of what should be are outlined. The motor task is gradually becoming more difficult. In the course of the movement, the central nervous system performs correction so that the set motor task and the model (standard) of the future movement coincide. At the third stage, the programming of the solution of the defined problem takes place, i.e. the individual himself outlines the goal and content of the movements and adequate means by which he can solve the motor task. At the fourth stage, the actual execution of movements is carried out: a person overcomes all excessive degrees of movement, turns it into a controlled system and performs the necessary purposeful movement. This is possible if the individual has mastered the coordination of movements. Violation of one of the components of coordination (accuracy, proportionality, smoothness) leads to a violation of movement. Motor coordination develops gradually through experience and exercise, as it is a complex sensorimotor act that begins with an afferent flow and ends with an adequate central response.

L.V. Fomina examined children in various children's institutions and found that the level of speech development is always in direct proportion to the degree of development of fine finger movements.

Neurologist and psychiatrist V.M. Bekhterev wrote that the function of hand movement is always closely connected with the function of speech, and the development of the first contributes to the development of the second. Koltsova with the staff of the Research Institute of Physiology of Children and Adolescents of the USSR Academy of Sciences established:

& about a third of the entire area of the motor projection of the brain is occupied by the projection of the hand, which is located next to the projection of the speech motor zone;

& work on the movements of the fingers really stimulates the maturation of the central nervous system, which is manifested, in particular, in accelerating the development of the child's speech[4].

Pavlov's statement that "speech is, first of all, muscle sensations that go from the speech organs to the cerebral cortex" is confirmed by many researchers of children's speech. Therefore, when studying the problem of how to stimulate the development of a child's speech, the idea arose of using muscle sensations from the speech apparatus. Looking at the "map" of the brain; we see that the motor speech area is located very close to the motor area, and the motor projection area is occupied by the projection of the hand, located very close to the motor speech area. The magnitude of the projection of the hand and its proximity to the motor speech zone led many scientists to the idea that the training of fine finger movements will have a great influence on the development of the child's active speech.

In neuropathology and defectology, there have long been observations that spoke of a close connection between the speech function and the motor function of the hand. Thus, it was known that in case of injury or hemorrhage in the speech motor area in the left hemisphere, a person loses not only speech, but also fine movements of the fingers of the right hand, even when the area of the motor projection of the fingers is not affected.

The motor analyzer of a person reaches a very high perfection: such subtle and precise motor acts as writing, drawing, playing musical instruments, speech, etc. are available to a person, requiring differentiated reactions of many muscle groups. The structural and functional features of the motor analyzer, which consist in the fact that it has extremely rich connections with all the structures of the central nervous system and takes part in their activity, give reason to assume that the motor analyzer is of particular importance in the development of brain activity.

Locomotor functions develop in a child by the beginning of the second year of life. At the age of 1-2 years, clumsiness and instability of movements are noted, caused by insufficient differentiation of movements and the absence of the necessary regulation of tone. In children of this age, expressive and defensive movements are being established and everyday movements begin to appear, which are still extremely inaccurate; there is a lot of synkinesis.

Children 3-7 years old are distinguished by mobility and grace, they have a well-developed ability to move and expressive movements; however, motor richness occurs only with free movements. If the child is asked to make precise movements, he immediately begins to get tired, distracted and tends to evade the task. The inability to be precise depends on the underdevelopment of the cortical mechanisms and on the lack of development of movement formulas. The apparent motor indefatigability of the child is connected with the fact that he does not produce productive working movements that require overcoming resistance and precision, and, consequently, a large expenditure of energy[1].

Fine motor skills are motor activities that are determined by the coordinated work of the small muscles of the hand and eye. It needs to be mastered, because. fine motor skills help the child to explore, compare, classify the things around him and thus allow him to better understand the world in which he lives. Fine motor skills help the child to independently serve themselves, express themselves through creativity - play, plasticity, help to increase the child's self-esteem. They make it easier for him

to participate in games and (at school age) in work, that is, they provide an opportunity to gain social experience.

In the studies of psychopathologists, much attention is paid to the question of whether the development of the child's motor skills is a consequence of the natural maturation of the corresponding structures, or is it the result of learning. In early works, the main role in this process was assigned to the maturation factor. More recent research has already raised the question that both maturation and learning are factors that are equally necessary for the formation of a child's motor skills. With regard to the first factors, maturation will naturally be decisive, while with respect to conditioned reflex motor acts, learning will be the determining factor.

Bernstein believes that the essence of the development of motor skills in ontogeny lies not in the biologically determined maturation of morphological substrates, but in the accumulation of individual human experience on the basis of these substrates and with their help[2].

Observations show that imitation plays an important role in mastering hand movements. There are three types of imitative reactions:

& repetition of own movements;

& repetition of familiar adult movements;

& repetition of new movements.

The history of a child's writing begins much earlier than the moment when the teacher puts a pencil in his hands for the first time and shows him how to write letters.

Drawing; according to L. S. Vygotsky, "there is a kind of graphic speech, a graphic story about something." Special studies have shown that there is a kind of critical moment when simple pencil scratching and meaningless scribbles begin to signify something.

At 1-1.5 years old, the baby firmly grips the pencil in the palm of his hand, which limits movement very much. At this age, he is not yet trying to portray something specific, he simply gets joy from the process itself.

At 2-3 years old, the child, as a rule, holds the pencil from above, holding it in the palm of his hand, the movements are still spontaneous, almost not limited.

From about the age of three, the lines become more defined, less scattered and do not repeat meaninglessly. Coordination increases when performing vertical movements, but imitation movements are still poorly performed. The ovals are uneven, but there are already a lot of them in the drawings: a person, the sun, wheels, etc.

At 3.5-4 years old, the child already knows how to hold a pencil and manipulate it quite freely. By this age, motor coordination and visual-spatial perception are improving, and this allows children to copy well. They can convey the proportions of figures, limit the length of lines and draw them relatively parallel.

At 5 years old, horizontal and vertical strokes are well performed. The child is already able to limit the length of the stroke, the lines become more even, clear, and this is helped by the correct way of holding the pen.

The drawings of five year old children show their ability to perform vertical, horizontal and cyclic movements. They are trying to write letters.

At 6 years old, children copy the simplest geometric shapes well, observing their size and proportions. The strokes become more clear and even, the ovals are complete. In fact, at this age, any graphic movements, any strokes and lines are available to children, and regular drawing classes improve movements, train visual memory and spatial perception,

creating the basis for successful learning to write (M.M. Bezrukikh).

A child's ability to draw and copy is a necessary element in determining a child's readiness for school. Therefore, an important parameter of school maturity is the level of development of the motor skills of the hand of the leading hand, which determines the speed and ease of formation of the writing skill. The process of mastering the skill of writing has a multicomponent psychophysiological structure: it includes visual and auditory analysis, articulation and preservation of the visual-motor image of each graphic element (letter), as well as the most complex mechanisms for coordinating the regulation of movements. The motor composition of writing is very complex and differs in originality at each stage of mastering the skill.

N. A. Bernstein notes that the act of cursive writing in the formed form includes a number of factors: the general tonic background of the writing hand and the entire working posture, the vibrational innervation of the muscles of the forearm, wrist and fingers, which is very rhythmic and monotonous; the implementation of the roundness of the movement and its temporary rhythmic pattern; implementation of the descriptive side of the letter (the contours of the letters and what constitutes an essential part of the handwriting). In the act of writing, there are certainly elements of adjusting to space: a skilled grip and holding of the writing instrument, the realization of the movement of the pen tip along the surface of the paper along real or imaginary lines.

Writing is a complex coordinated skill that requires the complex work of the small muscles of the hand, the whole arm, and the correct coordination of body movements. The fact is that the complexly coordinated movements of the child are, first of all, voluntary movements, i.e. movements that have a purpose; movements that are planned, controlled and evaluated; movements, the parameters of which can change under changing conditions of activity. The execution of such movements is provided by the integral - (joint) activity of various brain structures, and the violation of this activity can be the basis for the violation of movements, the difficulties of their formation and control. In addition, in children 6-7 years old, the small muscles of the hand are still poorly developed, the ossification of the bones of the wrist and phalanges of the fingers is not completed, the nervous regulation is imperfect, and this makes it difficult to form and perform movements. The formation of these functions is completed by 10-13 years.

One more factor of difficulties in the formation of finely coordinated actions cannot be ruled out. Motor awkwardness in performing manipulative actions, difficulties in mastering them, failures and frequent dissatisfaction of adults force the child to avoid performing actions that are difficult, so the dress with small buttons is “not pleasant”, the new constructor is “completely uninteresting, I’d rather play with cars”, knit, sculpt, design "not interesting, do not want to."

Graphic movements deserve special attention. Dislike for drawing is one of the indicators of impaired development of finely coordinated movements. Drawing, like writing, is an instrumental action, it is more complicated than just moving a hand: after all, the necessary movements of the tip of a drawing pencil are possible only if the movements of the fingers, hand, arm, torso are coordinated, if the child can control them, control them. At the same time, the age of 6-7 years is sensitive for the development of the hand. At this age, organizing various activities, systematically applying training exercises, you can achieve

good results in the development of hand motor skills.

E.M. Mastyukova described the age-related features of the development of fine motor skills of the hands and hand-eye coordination.

The movements of the fingers historically, in the course of the development of mankind, turned out to be closely related to the speech function[5].

CONCLUSION

Gestures were the first form of communication among primitive people. The role of the hand was especially great here - it made it possible, through pointing, outlining, defensive, threatening and other movements, to develop the primary language with which people explained themselves. Later, gestures began to be combined with exclamations and cries. Millennia passed until verbal speech developed, but for a long time it remained associated with gestural speech.

The movements of the fingers of people have improved from generation to generation, because. people performed more and more delicate and complex work with their hands. In this regard, there was an increase in the area of the motor projection of the hand in the human brain. So, the development of the functions of the hand and speech in people went in parallel.

Approximately the same course of development of the speech of the child. First, subtle movements of the fingers develop, then the articulation of syllables appears; all subsequent improvement of speech reactions is directly dependent on the degree of training of finger movements.

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